



12. (Amended) Apparatus for spatially modulating radiation comprising:
at least one surface acoustic wave diffractive element, each element having a
surface,
at least one transducer of surface acoustic waves,
a source of a plurality of modulating signals driving the at least one transducer to
transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave
diffractive elements,
a source of at least one input radiation beam constructed and arranged so that at
least a portion of the input radiation beam strikes a surface acoustic wave diffractive element
from outside the surface of that surface acoustic wave diffractive element,
and a plurality of modulated output radiation beams modulated by respective ones
of said modulating signals,
wherein the source of radiation is a laser having a cavity,
wherein the surface acoustic wave diffractive elements are positioned inside the
laser cavity so as to direct the output radiation beams out of the laser cavity. --

-- 18. (Amended) Apparatus for spatially modulating radiation comprising:
at least one surface acoustic wave diffractive element, each element having a
surface,
at least one transducer of surface acoustic waves,
a source of a plurality of modulating signals driving the at least one transducer to
transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave
diffractive elements,
a source of at least one input radiation beam constructed and arranged so that at
least a portion of the input radiation beam strikes a surface acoustic wave diffractive element
from outside the surface of that surface acoustic wave diffractive element,
and a plurality of modulated output radiation beams modulated by respective ones
of said modulating signals,

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cont wherein said at least one surface acoustic wave diffractive element has an active

area,

wherein the active area is patterned.

-- 19. (Amended.) Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

a4 and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

wherein said active area is on a curved surface. --

-- 20. (Amended.) Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

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cont and a plurality of modulated output radiation beams modulated by respective ones
of said modulating signals,

wherein said active area comprises multiple regions with different materials. --

-- 23. (Amended.) Apparatus for spatially modulating radiation comprising:
at least one surface acoustic wave diffractive element, each element having a
surface,
at least one transducer of surface acoustic waves,
a source of a plurality of modulating signals driving the at least one transducer to
transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave
diffractive elements,
a source of at least one input radiation beam constructed and arranged so that at
least a portion of the input radiation beam strikes a surface acoustic wave diffractive element
from outside the surface of that surface acoustic wave diffractive element,
as and a plurality of modulated output radiation beams modulated by respective ones
of said modulating signals,
wherein said at least one surface acoustic wave diffractive element has an active
area,
wherein the transducer comprises interdigital electrodes deposited on top of a
piece of electric substrate,
wherein the interdigital electrodes are irregularly spaced. --

-- 24. (Amended.) Apparatus for spatially modulating radiation comprising:
at least one surface acoustic wave diffractive element, each element having a
surface,
at least one transducer of surface acoustic waves,
a source of a plurality of modulating signals driving the at least one transducer to
transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave
diffractive elements,

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a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,
and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein the transducer is used to generate surface acoustic waves in the plurality of active areas. --

-- 26. (Amended.) Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

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a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

and further comprising a second transducer, the at least one transducer being electrically connected to said second transducer. --

-- 27. (Amended.) Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

and further comprising at least one second transducer constructed and arranged to transduce acoustic energy into electrical energy. --

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-- 28. (Amended.) Apparatus for spatially modulating radiation comprising:

at least one surface acoustic wave diffractive element, each element having a surface,

at least one transducer of surface acoustic waves,

a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements,

a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element,

and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals,

wherein said at least one surface acoustic wave diffractive element has an active area,

and further comprising a second surface acoustic wave diffractive element wherein the at least one surface acoustic wave diffractive element is located on the same substrate as the second surface acoustic wave diffractive element.

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-- 30. (Amended.) Apparatus for spatially modulating radiation comprising:
at least one surface acoustic wave diffractive element, each element having a
surface,
at least one transducer of surface acoustic waves,
a source of a plurality of modulating signals driving the at least one transducer to
transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave
diffractive elements,
a source of at least one input radiation beam constructed and arranged so that at
least a portion of the input radiation beam strikes a surface acoustic wave diffractive element
from outside the surface of that surface acoustic wave diffractive element,
and a plurality of modulated output radiation beams modulated by respective ones
of said modulating signals,
wherein the source of modulating signals provides radio frequency electrical
signals. --

Please add the following new claims:

--31. (New) The apparatus of claim 14 wherein said at least one surface acoustic
wave diffractive element has first and second active areas characterized by different mechanical
responses. --

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--32. (New) The apparatus of claim 14 wherein said active area comprises at
least one thin membrane. --

--33. (New) The apparatus of claim 14 wherein said active area is constructed
and arranged to magnify the amplitude of the surface acoustic wave. --

--34. (New) The apparatus of claim 14 wherein said surface acoustic waves are
flexural waves. --